

Claims

- [1] An electromagnetic shielding material comprising:
a polymer resin for a matrix; and
a conductive filler including a carbon nanotube and a metal.
- [2] The electromagnetic shielding material as recited in claim 1, wherein a volume percent of the carbon nanotube ranges from about 0.2 % to about 10 % and a volume percent of the metal powder ranges from about 7.0 % to about 30 % so that the total volume percent of the conductive filler is in a range of about 7.2 % to about 40 %.
- [3] The electromagnetic shielding material as recited in claim 1, wherein the carbon nanotube employs a single-walled carbon nanotube or a multi-walled carbon nanotube.
- [4] The electromagnetic shielding material as recited in claim 3, wherein the carbon nanotube is manufactured by a method selected from the group consisting of a chemical vapor deposition, an arc discharge, a plasma torch and an ion impact.
- [5] The electromagnetic shielding material as recited in claim 3, wherein the carbon nanotube is material selected from the group consisting of a nanotube having a phenyl-carbonyl C-C stretch bonding peak existing between about $1,300\text{ cm}^{-1}$ and about $1,100\text{ cm}^{-1}$, a nanotube having a phenyl-carbonyl C-C stretch bonding peak existing between about $1,300\text{ cm}^{-1}$ and about $1,100\text{ cm}^{-1}$, a carbonic C-C stretch bonding peak existing between about $1,570\text{ cm}^{-1}$ and about $1,430\text{ cm}^{-1}$ and a carboxylic C=O stretch vibration peak existing at about $1,650\text{ cm}^{-1}$, a nanotube having a phenyl-carbonyl C-C stretch bonding peak existing between about $1,300\text{ cm}^{-1}$ and about $1,100\text{ cm}^{-1}$, a carboxyl C=O stretch vibration peak existing at about $1,650\text{ cm}^{-1}$ and an -OH bonding peak existing at about $3,550\text{ cm}^{-1}$, a nanotube having a C-F bonding peak existing at about $1,250\text{ cm}^{-1}$ and a combination thereof.
- [6] The electromagnetic shielding material as recited in claim 1, wherein the polymer resin is a general-purpose polymer selected from the group consisting of a silicon rubber, a polyurethane, a polycarbonate, a polymethyl methacrylate, polyvinyl alcohol, Acrylonitrile-Butadiene-Styrene terpolymer (ABS) and a combination thereof.
- [7] The electromagnetic shielding material as recited in claim 1, wherein the polymer resin is a thermosetting resin selected from the group consisting of

epoxy, polyimide and a combination thereof.

- [8] The electromagnetic shielding material as recited in claim 1, wherein electrical conductivity of the metal is higher than 10^5 S/cm.
- [9] The electromagnetic shielding material as recited in claim 8, wherein the metal is a material selected from the group consisting of a silver powder, a silver-coated copper powder, a steel fiber, a copper fiber, an aluminum fiber and a nickel fiber.